

0053510

Date: 17 May 2000
To: Bechtel Hanford, Inc. (technical representative)
From: TechLaw, Inc.
Project: 100-D Areas - Full Protocol - Waste Site 100-D-52
Subject: Radiochemistry - Data Package No. H0790-TR (SDG No. H0790)

INTRODUCTION

This memo presents the results of data validation on Summary Data Package No. H0790-TR which was prepared by ThermoRetec (TR). A list of samples validated along with the analyses reported and the requested analytes is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analysis
BOXPT2	3/21/00	Soil	C	See note 1
BOXPT3	3/21/00	Soil	C	See note 1
BOXPT4	3/21/00	Soil	C	See note 1
BOXPT5	3/21/00	Soil	C	See note 1
BOXPT6	3/21/00	Soil	C	See note 1
BOXPT7	3/21/00	Soil	C	See note 1

1 - Gamma spectroscopy; alpha spectroscopy (isotopic uranium, isotopic plutonium and americium-241); total strontium.

Data validation was conducted in accordance with the BHI validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL May 1998). Appendices 1 through 5 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualification

Appendix 3. Qualified Data Summary and Annotated Laboratory Reports

Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

Appendix 5. Data Validation Supporting Documentation

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DATA QUALITY OBJECTIVES

- **Holding Times**

Holding times are calculated from Chain-of-Custody forms to determine the validity of the results. The maximum holding time for radiochemical analysis is 6 months.

All holding times were acceptable.

- **Blanks**

Laboratory Blanks

Blank samples are analyzed to determine if positive results are due to laboratory reagent, sample container, or detector contamination. If blank analysis results indicate the presence of an analyte above the MDA, the following qualifiers are applied: All positive sample results less than five times the highest blank concentration are qualified as estimates and flagged "J"; sample results below the MDA are qualified as undetected and flagged "U"; sample results above the MDA and greater than five times the highest blank concentration are not qualified.

All blank results were acceptable although the TDL was exceeded for uranium-233, uranium-235(aspec), uranium-238(aspec), plutonium-238 and uranium-238(gea).

Equipment Blanks

One equipment blank (BOXPT4) was submitted for analysis. Uranium-233(aspec), uranium-238(aspec), potassium-40, radium-226, radium-228, thorium-228 and thorium-232 were detected in the equipment blank. All other equipment blank results were acceptable although the TDL was exceeded for uranium-235(aspec), plutonium-238 and uranium-238(gea).

- **Accuracy**

Accuracy is evaluated by analyzing distilled water or field samples spiked with known amounts of radionuclides. The sample activity as determined by analysis is compared to the known activity to assess accuracy. The acceptable laboratory control sample and matrix spike recovery range is either 70-130% or ± 3 sigma. In addition, samples may be spiked with a radiochemical tracer to assist in isolating the radioisotope of interest with the yield of the tracer being used in calculating sample activity. The acceptable range for tracer recovery is

20% to 105%. Spike sample results outside the above ranges result in associated sample results being qualified as estimates, rejected, or not qualified, depending on the activity of the individual sample.

All accuracy results were acceptable.

- **Precision**

Analytical precision is expressed by the RPD between the recoveries of duplicate matrix spike analyses performed on a sample. Precision may also be assessed using unspiked duplicate sample analyses. If both sample and replicate activities are greater than five times the CRDL and the RPD is less than 30 percent, the results are acceptable. If either activities are less than five times the CRDL, a control limit of less than or equal to two times the CRDL is used for soil samples and less than or equal to the CRDL for water samples. If either the original or replicate value is below the CRDL, the applicable control limits are less than or equal to the CRDL for water samples and less than or equal to two times the CRDL for soil samples. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All duplicate results were acceptable.

Field Duplicate Sample

One sample duplicate pair (BOXPT2/BOXPT3) was submitted for analysis. The samples were compared using the same criteria as for a laboratory duplicate. All field duplicate results were acceptable.

- **Detection Levels**

Reported analytical detection levels for undetected analytes are compared against the 100 Area Remedial Action Sampling and Analysis Plan target detection limits (TDLs) or the contract specified MDA if no TDL was specified, to ensure that laboratory detection levels meet the required criteria. The following analytes were reported above their TDL: Uranium-235(aspec) and uranium-238(gea) in all samples; plutonium-238 in samples BOXPT4 and BOXPT6; americium-241(aspec) and europium-155 in all samples except BOXPT4; europium-154 and uranium-235(gea) in all samples except BOXPT4 and BOXPT7; and americium-241(gea) in samples BOXPT3 and BOXPT6. Under the BHI statement of work, no qualification is required. All other reported laboratory MDAs were at or below the analyte-specific TDL or contract specified MDA.

- **Completeness**

Data Package No. H0790 (SDG No. H0790) was submitted for validation and verified for completeness. The completion rate was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following analytes were reported above their TDL: Uranium-235(aspec) and uranium-238(gea) in all samples; plutonium-238 in samples BOXPT4 and BOXPT6; americium-241(aspec) and europium-155 in all samples except BOXPT4; europium-154 and uranium-235(gea) in all samples except BOXPT4 and BOXPT7; and americium-241(gea) in samples BOXPT3 and BOXPT6. Under the BHI statement of work, no qualification is required.

REFERENCES

BHI, MRB-SBB-A23665, *Validation Statement of Work*, Bechtel Hanford Incorporated, September 5, 1997.

DOE/RL-96-22, Rev. 1, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, May 1998.

Appendix 1
Glossary of Data Reporting Qualifiers

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Qualifiers which may be applied by data validators in compliance with the BHI statement of work are as follows:

- U** - Indicates the compound or analyte was analyzed for and not detected above the minimum detectable activity (MDA) in the sample. The value reported is the sample result corrected for sample dilution and moisture content by the laboratory. The data is usable for decision making purposes.
- UJ** - Indicates the compound or analyte was analyzed for and not detected at concentrations above the minimum detectable activity (MDA) in the sample. Due to a QC deficiency identified during the data validation, the associated quantitation limit is an estimate, but is usable for decision making purposes.
- J** - Indicates the compound or analyte was analyzed for and detected. Due to a QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.
- R** - Indicates the compound or analyte was analyzed for, detected, and due to an identified QC deficiency, the data are unusable.
- UR** - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified QC deficiency.

Appendix 2
Summary of Data Qualification

000007

DATA QUALIFICATION SUMMARY

SDG: H0790	REVIEWER: TLI	DATE: 5/17/00	PAGE <u>1</u> OF <u>1</u>
COMMENTS: No qualifiers assigned.			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON

000008

Appendix 3
Qualified Data Summary and Annotated Laboratory Reports

000009

Project: BECHTEL-HANFORD																			
Laboratory: TNU																			
Case	SDQ: H0790	BOXPT2		BOXPT3		BOXPT4		BOXPT5		BOXPT6		BOXPT7							
Sample Number		A1		A1		A1		A2		A3		A4							
Location																			
Remarks		Duplicate		E. Blank															
Sample Date		3/21/00		3/21/00		3/21/00		3/21/00		3/21/00		3/21/00							
Radiochemistry	CRDL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Strontium (total)	1	-0.016	U	-0.022	U	-0.038	U	-0.029	U	-0.025	U	-0.012	U						
Uranium-233	0.1	0.447		0.506		0.328		0.317		0.345		0.450							
Uranium-235	0.1	0.068	U	0.019	U	0.020	U	0.061	U	0.060	U	0	U						
Uranium-238	0.1	0.391		0.553		0.228		0.267		0.321		0.430							
Plutonium-238	0.1	-0.013	U	0	U	-0.008	U	0	U	0.007	U	0.023	U						
Plutonium-239/40	0.1	0	U	-0.007	U	-0.008	U	0.008	U	0.007	U	-0.008	U						
Americium-241	0.1	-0.027	U	0.035	U	0.020	U	-0.027	U	0.036	U	0.044	U						
Potassium-40		8.50		11.0		3.13		8.00		8.55		8.91							
Cobalt 60	0.05	U	U	U	U	U	U	U	U	U	U	U	U						
Cesium 137	0.05	U	U	0.085		U	U	U	U	0.034		U	U						
Radium-226		0.354		0.385		0.183		0.285		0.235		0.302							
Radium-228		0.645		0.625		0.246		0.488		0.493		0.432							
Europium 152	0.1	U	U	0.363		U	U	U	U	U	U	U	U						
Europium 154	0.1	U	U	U	U	U	U	U	U	U	U	U	U						
Europium 155	0.05	U	U	U	U	U	U	U	U	U	U	U	U						
Thorium-228		0.461		0.583		0.240		0.443		0.431		0.402							
Thorium-232		0.545		0.625		0.246		0.488		0.493		0.432							
Uranium-235 (GEA)	0.1	U	U	U	U	U	U	U	U	U	U	U	U						
Uranium-238 (GEA)	0.1	U	U	U	U	U	U	U	U	U	U	U	U						
Americium-241 (GEA)	0.1	U	U	U	U	U	U	U	U	U	U	U	U						

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0790

R003141-01

BOXPT2

DATA SHEET

SDG <u>7378</u>	Client/Case no <u>Hanford</u>	SDG <u>H0790</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>TRB-SBB-207925</u>	
Lab sample id <u>R003141-01</u>	Client sample id <u>BOXPT2</u>	
Dept sample id <u>7378-001</u>	Location/Matrix <u>100-D Area (100-D-52)</u>	<u>SOLID</u>
Received <u>03/23/00</u>	Collected <u>03/21/00 14:20</u>	
% solids <u>97.3</u>	Custody/SAF No <u>B99-005-097</u>	<u>B99-005</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Total Strontium	SR-RAD	-0.016	0.12	0.16	1.0	U	SR
Uranium 233	U-233/234	0.447	0.19	0.14	1.0	J	U
Uranium 235	15117-96-1	0.068	0.090	0.17	1.0	U	U
Uranium 238	U-238	0.391	0.19	0.14	1.0	J	U
Plutonium 238	13981-16-3	-0.013	0.038	0.086	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.013	0.049	1.0	U	PU
Americium 241	14596-10-2	-0.027	0.081	0.17	1.0	U	AM
Potassium 40	13966-00-2	9.50	0.77	0.32			GAM
Cobalt 60	10198-40-0	U		0.044	0.050	U	GAM
Cesium 137	10045-97-3	U		0.040	0.10	U	GAM
Radium 226	13982-63-3	0.354	0.079	0.076	0.10		GAM
Radium 228	15262-20-1	0.545	0.17	0.17	0.20		GAM
Europium 152	14683-23-9	U		0.099	0.10	U	GAM
Europium 154	15585-10-1	U		0.16	0.10	U	GAM
Europium 155	14391-16-3	U		0.071	0.10	U	GAM
Thorium 228	14274-82-9	0.461	0.043	0.042			GAM
Thorium 232	TH-232	0.545	0.17	0.17			GAM
Uranium 235	15117-96-1	U		0.12		U	GAM
Uranium 238	U-238	U		5.8		U	GAM
Americium 241	14596-10-2	U		0.045	1.0	U	GAM

100 D Areas - Full Protocol

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5/17/00

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Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>04/11/00</u>

000011

T M A / R I C H M O N D
SAMPLE DELIVERY GROUP H0790

R003141-02

BOXPT3

D A T A S H E E T

SDG <u>7378</u>	Client/Case no <u>Hanford</u>	SDG <u>H0790</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>TRB-SBB-207925</u>	
Lab sample id <u>R003141-02</u>	Client sample id <u>BOXPT3</u>	
Dept sample id <u>7378-002</u>	Location/Matrix <u>100-D Area (100-D-52)</u>	<u>SOLID</u>
Received <u>03/23/00</u>	Collected <u>03/21/00 14:25</u>	
% solids <u>96.5</u>	Custody/SAF No <u>B99-005-097</u>	<u>B99-005</u>

ANALYTE	CAS NO	RESULT pCi/g.	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Total Strontium	SR-RAD	-0.022	0.11	0.15	1.0	U	SR
Uranium 233	U-233/234	0.506	0.19	0.12	1.0	J	U
Uranium 235	15117-96-1	0.019	0.038	0.15	1.0	U	U
Uranium 238	U-238	0.553	0.19	0.12	1.0	J	U
Plutonium 238	13981-16-3	0	0.042	0.087	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.007	0.014	0.054	1.0	U	PU
Americium 241	14596-10-2	0.035	0.071	0.12	1.0	U	AM
Potassium 40	13966-00-2	11.0	0.92	0.38		GAM	
Cobalt 60	10198-40-0	U		0.046	0.050	U	GAM
Cesium 137	10045-97-3	0.065	0.041	0.049	0.10	J	GAM
Radium 226	13982-63-3	0.365	0.078	0.080	0.10		GAM
Radium 228	15262-20-1	0.625	0.19	0.20	0.20		GAM
Europium 152	14683-23-9	0.363	0.082	0.098	0.10		GAM
Europium 154	15585-10-1	U		0.17	0.10	U	GAM
Europium 155	14391-16-3	U		0.12	0.10	U	GAM
Thorium 228	14274-82-9	0.563	0.050	0.054			GAM
Thorium 232	TH-232	0.625	0.19	0.20			GAM
Uranium 235	15117-96-1	U		0.16		U	GAM
Uranium 238	U-238	U		5.3		U	GAM
Americium 241	14596-10-2	U		0.16	1.0	U	GAM

100 D Areas - Full Protocol

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Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>04/11/00</u>

000012

T M A / R I C H M O N D
SAMPLE DELIVERY GROUP H0790

R003141-03

BOXPT4

D A T A S H E E T

SDG <u>7378</u>	Client/Case no <u>Hanford</u>	SDG <u>H0790</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>TRB-SBB-207925</u>	
Lab sample id <u>R003141-03</u>	Client sample id <u>BOXPT4</u>	
Dept sample id <u>7378-003</u>	Location/Matrix <u>100-D Area (100-D-52)</u>	<u>SOLID</u>
Received <u>03/23/00</u>	Collected <u>03/21/00 14:35</u>	
# solids <u>99.9</u>	Custody/SAF No <u>B99-005-097</u>	<u>B99-005</u>

ANALYTE	CAS NO	RESULT pCi/g	2 σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FERS	TEST
Total Strontium	SR-RAD	-0.038	0.13	0.18	1.0	U	SR
Uranium 233	U-233/234	0.326	0.16	0.12	1.0	J	U
Uranium 235	15117-96-1	0.020	0.039	0.15	1.0	U	U
Uranium 238	U-238	0.228	0.13	0.12	1.0	J	U
Plutonium 238	13981-16-3	-0.008	0.050	0.11	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.008	0.033	0.080	1.0	U	PU
Americium 241	14596-10-2	0.020	0.026	0.050	1.0	U	AM
Potassium 40	13966-00-2	3.13	0.29	0.12		GAM	
Cobalt 60	10198-40-0	U		0.015	0.050	U	GAM
Cesium 137	10045-97-3	U		0.016	0.10	U	GAM
Radium 226	13982-63-3	0.183	0.034	0.035	0.10		GAM
Radium 228	15262-20-1	0.246	0.077	0.077	0.20		GAM
Europium 152	14683-23-9	U		0.043	0.10	U	GAM
Europium 154	15585-10-1	U		0.048	0.10	U	GAM
Europium 155	14391-16-3	U		0.043	0.10	U	GAM
Thorium 228	14274-82-9	0.240	0.021	0.019			GAM
Thorium 232	TH-232	0.246	0.077	0.077			GAM
Uranium 235	15117-96-1	U		0.070		U	GAM
Uranium 238	U-238	U		2.1		U	GAM
Americium 241	14596-10-2	U		0.065	1.0	U	GAM

100 D Areas - Full Protocol

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5/17/00

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Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>04/11/00</u>

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0790

R003141-04

BOXPTS

DATA SHEET

SDG <u>7378</u> Contact <u>Melissa C. Mannion</u>	Client/Case no <u>Hanford</u> Contract <u>TRB-SBB-207925</u>	SDG <u>H0790</u>
Lab sample id <u>R003141-04</u>	Client sample id <u>BOXPTS</u>	
Dept sample id <u>7378-004</u>	Location/Matrix <u>100-D Area (100-D-52)</u>	<u>SOLID</u>
Received <u>03/23/00</u>	Collected <u>03/21/00 14:40</u>	
% solids <u>97.3</u>	Custody/SAF No <u>B99-005-097</u>	<u>B99-005</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Total Strontium	SR-RAD	-0.029	0.10	0.14	1.0	U	SR
Uranium 233	U-233/234	0.317	0.14	0.13	1.0	J	U
Uranium 235	15117-96-1	0.061	0.081	0.15	1.0	U	U
Uranium 238	U-238	0.267	0.14	0.13	1.0	J	U
Plutonium 238	13981-16-3	0	0.037	0.083	1.0	U	PU
Plutonium 239/240	PU-239/240	0.006	0.025	0.048	1.0	U	PU
Americium 241	14596-10-2	-0.027	0.082	0.17	1.0	U	AM
Potassium 40	13966-00-2	8.00	0.75	0.37		GAM	
Cobalt 60	10198-40-0	U		0.044	0.050	U	GAM
Cesium 137	10045-97-3	U		0.038	0.10	U	GAM
Radium 226	13982-63-3	0.285	0.066	0.064	0.10		GAM
Radium 228	15262-20-1	0.488	0.15	0.13	0.20		GAM
Europium 152	14683-23-9	U		0.084	0.10	U	GAM
Europium 154	15585-10-1	U		0.13	0.10	U	GAM
Europium 155	14391-16-3	U		0.062	0.10	U	GAM
Thorium 228	14274-82-9	0.443	0.054	0.055			GAM
Thorium 232	TH-232	0.488	0.15	0.13			GAM
Uranium 235	15117-96-1	U		0.11		U	GAM
Uranium 238	U-238	U		5.0		U	GAM
Americium 241	14596-10-2	U		0.041	1.0	U	GAM

100 D Areas - Full Protocol

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5/17/00

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Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>04/11/00</u>

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TMA / RICHMOND
SAMPLE DELIVERY GROUP H0790

R003141-05

BOXPT6

DATA SHEET

SDG 7378 Contact Melissa C. Mannion	Client/Case no Hanford Contract TRB-SBB-207925	SDG H0790
Lab sample id R003141-05	Client sample id BOXPT6	
Dept sample id 7378-005	Location/Matrix 100-D Area (100-D-52)	SOLID
Received 03/23/00	Collected 03/21/00 14:45	
% solids 97.3	Custody/SAF No B99-005-097	B99-005

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Total Strontium	SR-RAD	-0.025	0.096	0.14	1.0	U	SR
Uranium 233	U-233/234	0.345	0.20	0.19	1.0	J	U
Uranium 235	15117-96-1	0.060	0.060	0.23	1.0	U	U
Uranium 238	U-238	0.321	0.20	0.19	1.0	J	U
Plutonium 238	13981-16-3	0.007	0.058	0.12	1.0	U	PU
Plutonium 239/240	PU-239/240	0.007	0.044	0.081	1.0	U	PU
Americium 241	14596-10-2	0.036	0.072	0.14	1.0	U	AM
Potassium 40	13966-00-2	8.55	0.72	0.27			GAM
Cobalt 60	10198-40-0	U		0.040	0.050	U	GAM
Cesium 137	10045-97-3	0.034	0.027	0.032	0.10	J	GAM
Radium 226	13982-63-3	0.235	0.076	0.089	0.10		GAM
Radium 228	15262-20-1	0.493	0.17	0.17	0.20		GAM
Europium 152	14683-23-9	U		0.099	0.10	U	GAM
Europium 154	15585-10-1	U		0.13	0.10	U	GAM
Europium 155	14391-16-3	U		0.097	0.10	U	GAM
Thorium 228	14274-82-9	0.431	0.040	0.041			GAM
Thorium 232	TH-232	0.493	0.17	0.17			GAM
Uranium 235	15117-96-1	U		0.13		U	GAM
Uranium 238	U-238	U		4.7		U	GAM
Americium 241	14596-10-2	U		0.12	1.0	U	GAM

100 D Areas - Full Protocol

OK
5/17/00

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 04/11/00

000015

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0790

R003141-06

BOXPT7

DATA SHEET

SDG <u>7378</u>	Client/Case no <u>Hanford</u>	SDG H0790
Contact <u>Melissa C. Mannion</u>	Contract <u>TRB-SBB-207925</u>	
Lab sample id <u>R003141-06</u>	Client sample id <u>BOXPT7</u>	
Dept sample id <u>7378-006</u>	Location/Matrix <u>100-D Area (100-D-52)</u>	<u>SOLID</u>
Received <u>03/23/00</u>	Collected <u>03/21/00 14:50</u>	
% solids <u>97.4</u>	Custody/SAF No <u>B99-005-097</u>	<u>B99-005</u>

ANALYTE	CAS NO	RESULT pCi/g.	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Total Strontium	SR-RAD	-0.012	0.083	0.11	1.0	U	SR
Uranium 233	U-233/234	0.450	0.21	0.16	1.0	J	U
Uranium 235	15117-96-1	0	0.050	0.19	1.0	U	U
Uranium 238	U-238	0.430	0.21	0.16	1.0	J	U
Plutonium 238	13981-16-3	0.023	0.061	0.10	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.008	0.015	0.058	1.0	U	PU
Americium 241	14596-10-2	0.044	0.088	0.18	1.0	U	AM
Potassium 40	13966-00-2	8.91	0.45	0.18			GAM
Cobalt 60	10198-40-0	U		0.022	0.050	U	GAM
Cesium 137	10045-97-3	U		0.019	0.10	U	GAM
Radium 226	13982-63-3	0.302	0.039	0.035	0.10		GAM
Radium 228	15262-20-1	0.432	0.078	0.075	0.20		GAM
Europium 152	14683-23-9	U		0.050	0.10	U	GAM
Europium 154	15585-10-1	U		0.070	0.10	U	GAM
Europium 155	14391-16-3	U		0.054	0.10	U	GAM
Thorium 228	14274-82-9	0.402	0.026	0.024			GAM
Thorium 232	TH-232	0.432	0.078	0.075			GAM
Uranium 235	15117-96-1	U		0.084		U	GAM
Uranium 238	U-238	U		2.6		U	GAM
Americium 241	14596-10-2	U		0.075	1.0	U	GAM

100 D Areas - Full Protocol

pw
5/17/00

DATA SHEETS
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SUMMARY DATA SECTION
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Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>04/11/00</u>

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Appendix 4
Laboratory Narrative and Chain-of-Custody Documentation

000017

Case Narrative

Page 1 of 1

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H0790 is composed of six solid (soil) samples designated under SAF No. B99-005 with a Project Designation of: 100 D Areas – Full Protocol.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the TNU Sample Receipt Checklist. The results were transmitted to BHI via e-Fax on April 7th and 11th, 2000.

2.0 ANALYSIS NOTES

2.1 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.2 Isotopic Uranium Analyses

The LSC percent recovery for U-238 was 123%; it was within the three-sigma limits of 75 to 125% and within BHI's protocol limits of 70 to 130%. No other problems were encountered during the course of the analyses.

2.3 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.4 Americium-241 Analyses

No problems were encountered during the course of the analyses.

2.5 Gamma Spec Analyses

No problems were encountered during the course of the analyses.



000018

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B99-005-097	Page 1 of 2	
Collector Kerkow/Cowgill		Company Contact RB Kerkow	Telephone No. 531-0635	Project Coordinator TRENT, SJ		Price Code 8K	Data Turnaround 15 Days	
Project Designation 100 D Areas - Full Protocol		Sampling Location 100-D Area (100-D-52)	HD79D (7378)		SAF No. B99-005		Air Quality <input type="checkbox"/>	
Ice Chest No. ERC99-071		Field Logbook No. EL-1339-6	COA R00D522600	Method of Shipment FedEx				
Shipped To TMAR/BSRA JAC 3-21-00		Offsite Property No. A0000139		Bill of Lading/Air Bill No. R0032810357953		<i>820077526010</i>		
POSSIBLE SAMPLE HAZARDS/REMARKS Potentially Radioactive		Preservation	None	None				
		Type of Container	P	X				
		No. of Container(s)	1	X				
		Volume	1L	250mL				
Special Handling and/or Storage 610000		See Item (1) in Special Instructions	See Item (2) in Special Instructions					
		SAMPLE ANALYSIS						
Sample No.	Matrix *			Sample Date	Sample Time			
✓ BOXPT2	Soil	3-21-00	1420	X				BOX155
✓ BOXPT3	Soil	3-21-00	1425	X				BOX155
✓ BOXPT4	Soil	3-21-00	1435	X				BOX155
✓ BOXPT5	Soil	3-21-00	1440	X				BOX157
✓ BOXPT6	Soil	3-21-00	1445	X				BOX1C3
CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS				Matrix *
Relinquished By <i>J.A. Cowgill/Jon Cowgill</i>	Date/Time <i>3-21-00 / 1630</i>	Received By <i>Fridge 1A</i>	Date/Time <i>3-21-00 / 1630</i>	(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Isotopic Plutonium; Isotopic Uranium; Americium-241; Strontium-89,90 - Total Sr (2) ICP-Mass 6010A (Spectroscopic Analysis: Chromium, Lead, Mercury, 2421 (CD)) <i>DET C R4T 3-22-00</i>				B=Soil S2=Sediment SO=Soil S=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Trace W=Wipe L=Liquid V=Vegetables X=Other
Relinquished By <i>Ref. 1A 3-22-00 / 0900</i>	Date/Time <i>3-22-00 / 0900</i>	Received By <i>R.Tharen</i>	Date/Time <i>R.Tharen 3-22-00 / 0900</i>					
Relinquished By <i>R.Tharen</i>	Date/Time <i>3-22-00 / 1430</i>	Received By <i>FED EX</i>	Date/Time <i>3-22-00</i>					
Relinquished By <i>Fed Ex</i>	Date/Time <i>3-23-00 9:30</i>	Received By <i>Arlene J.R. Perez</i>	Date/Time <i>3-23-00</i>					
Relinquished By	Date/Time	Received By	Date/Time					
LABORATORY SECTION	Received By	Title				Date/Time		
FINAL SAMPLE DISPOSITION	Dispose Method	Disposed By				Date/Time		

FAXED
3/23/00

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B99-005-097

Page 2 of 2

Collector Kerkow/Cowgill	Company Contact RB Kerkow	Telephone No. 531-0635	Project Coordinator TRENT, SJ	Price Code 8K	Data Turnaround
Project Designation 100 D Areas - Full Protocol	Sampling Location 100-D Area (100-D-52)	HD790 (7378)	SAF No. B99-005	Air Quality <input type="checkbox"/>	15 Days
Ice Chest No. ERC 99-071	Field Logbook No. EL-1339-6	COA R00D522600	Method of Shipment		
Shipped To TMA/REGRA JAC 3-21-00	Offsite Property No.			Bill of Lading/Air Bill No. 82007752 - 602D	

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially Radioactive

Special Handling and/or Storage

000020

Preservation	None	None											
Type of Container	P	G											
No. of Container(s)	1	X											
Volume	1L	20ML											

See item (1) in
Special Instructions.
See item (2) in
Special Instructions.TIE
TO
↓

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time										
BOXPT7	Soil	3-21-00	1450	X									TSOKIC8

CHAIN OF POSSESSION

Sign/Print Names

SPECIAL INSTRUCTIONS

Matrix *

S=Soil
SE=Sediment
SO=Solid
S=Sludge
W=Water
O=Oil
A=Air
DS=Dry Solids
DL=Dry Liquids
T=Time
W=Wipe
L=Liquid
V=Vegetation
X=Other

Relinquished By JA Cowgill/Karen Cowgill	Date/Time 3-21-00/1630	Received By Fridge/A	Date/Time 3-21-00/1630
Relinquished By R. Thoren	Date/Time 3-22-00/0900	Received By R. Thoren	Date/Time 3-22-00/0900
Relinquished By R. Thoren	Date/Time 3-22-00/1430	Received By FED EX	Date/Time 3-22-00
Relinquished By FED EX	Date/Time 3-22-00 9:30	Received By McCormick JR Co 030	Date/Time 3-22-00
Relinquished By	Date/Time	Received By	Date/Time

(1) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155);
 Isotopic Plutonium; Isotopic Uranium; Americium-241; Strontium-89,90 – Total Sr
 (2) ICP-Metals-6010A (Supernatant); Barium, Chromium, Lead; Mercury-7421-(Gd)
 delete Rat 3-22-00

FAXED
3/23/00

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Appendix 5
Data Validation Supporting Documentation

000021

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100D 100-D-52					HO790
VALIDATOR: TL1	LAB: Recata				DATE: 4/28/00
CASE:		SDG:			HO790
ANALYSES PERFORMED					
<input type="checkbox"/> Gross Alpha/Beta	<input checked="" type="checkbox"/> Strontium-89	<input type="checkbox"/> Technetium-99	<input checked="" type="checkbox"/> Alpha Spectroscopy	<input checked="" type="checkbox"/> Gamma Spectroscopy	
<input type="checkbox"/> Total Uranium	<input type="checkbox"/> Radium-22	<input type="checkbox"/> Tritium	<input type="checkbox"/>		
SAMPLES/MATRIX Soil					
BOXPT2 BOXPT3 BOXPT4 BOXPTS BOXPT6 BOXPT7					

1. Completeness N/A

Technical verification forms present? Yes No N/A

Comments: _____

2. Initial Calibration N/A

Instruments/detectors calibrated within one year of sample analysis? Yes No N/A

Initial calibration acceptable? Yes No N/A

Standards NIST traceable? Yes No N/A

Standards Expired? Yes No N/A

Comments: _____

3. Continuing Calibration N/A

Calibration checked within one week of sample analysis? . . . Yes No N/A

Calibration check acceptable? Yes No N/A

Calibration check standards NIST traceable? Yes No N/A

Calibration check standards expired? Yes No N/A

Comments: _____

4. Blanks N/A

Method blank analyzed? Yes No N/A

Method blank results acceptable? Yes No N/A

Analytes detected in method blank? Yes No N/A

Field blank(s) analyzed? Yes No N/A

Field blank results acceptable? Yes No N/A

Analytes detected in field blank(s)? Yes No N/A

Transcription/Calculation Errors? Yes No N/A

Comments: U233, U238(AsPC), T40, RA 224/28 / th 228/232,

5. Matrix Spikes N/A

Matrix spike analyzed? Yes No N/A

Spike recoveries acceptable? Yes No N/A

Spike source traceable? Yes No N/A

Spike source expired? Yes No N/A

Transcription/Calculation Errors? Yes No N/A

Comments: _____

A-3

000023

6. Laboratory Control Samples N/A

LCS analyzed? Yes No N/A

LCS recoveries acceptable? Yes No N/A

LCS traceable? Yes No N/A

Transcription/Calculation Errors? Yes No N/A

Comments: _____

7. Chemical Recovery N/A

Chemical carrier added? Yes No N/A

Chemical recovery acceptable? Yes No N/A

Chemical carrier traceable? Yes No N/A

Chemical carrier expired? Yes No N/A

Transcription/Calculation errors? Yes No N/A

Comments: _____

8. Duplicates N/A

Duplicates Analyzed? Yes No N/A

RPD Values Acceptable? Yes No N/A

Transcription/Calculation Errors? Yes No N/A

Comments: _____

9. Field QC Samples N/A

Field duplicate sample(s) analyzed? Yes No N/A

Field duplicate RPD values acceptable? Yes No N/A

Field split sample(s) analyzed? Yes No N/A

Field split RPD values acceptable? Yes No N/A

Performance audit sample(s) analyzed? Yes No N/A

Performance audit sample results acceptable? Yes No N/A

Comments: $U^{238}(\text{Asp}) = 34\%$

10. Holding Times

Are sample holding times acceptable? Yes No N/A

Comments: _____

11. Results and Detection Limits (Levels D & E)

Results reported for all required sample analyses? Yes No N/A

Results supported in raw data? Yes No N/A

Results Acceptable? Yes No N/A

Transcription/Calculation errors? Yes No N/A

MDA's meet required detection limits? Yes No N/A

Transcription/calculation errors? Yes No N/A

Comments: _____

-A-

000025

T M A / R I C H M O N D
SAMPLE DELIVERY GROUP H0790

R003141-08

Method Blank

METHOD BLANK

SDG <u>7378</u> Contact <u>Melissa C. Mannion</u>	Client/Case no <u>Hanford</u> Contract <u>TRB-SBB-207925</u>	SDG <u>H0790</u>
Lab sample id <u>R003141-08</u> Dept sample id <u>7378-008</u>	Client sample id <u>Method Blank</u> Material/Matrix _____ SAF No <u>B99-005</u>	<u>SOLID</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Total Strontium	SR-RAD	-0.029	0.12	0.16	1.0	U	SR
Uranium 233	U-233/234	-0.020	0.039	0.15	1.0	U	U
Uranium 235	15117-96-1	0	0.047	0.18	1.0	U	U
Uranium 238	U-238	0	0.039	0.15	1.0	U	U
Plutonium 238	13981-16-3	0.008	0.063	0.11	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.031	0.075	1.0	U	PU
Americium 241	14596-10-2	0.042	0.056	0.086	1.0	U	AM
Potassium 40	13966-00-2	U		0.20		U	GAM
Cobalt 60	10198-40-0	U		0.032	0.050	U	GAM
Cesium 137	10045-97-3	U		0.019	0.10	U	GAM
Radium 226	13982-63-3	U		0.036	0.10	U	GAM
Radium 228	15262-20-1	U		0.086	0.20	U	GAM
Europium 152	14683-23-9	U		0.044	0.10	U	GAM
Europium 154	15585-10-1	U		0.057	0.10	U	GAM
Europium 155	14391-16-3	U		0.025	0.10	U	GAM
Thorium 228	14274-82-9	U		0.019		U	GAM
Thorium 232	TH-232	U		0.086		U	GAM
Uranium 235	15117-96-1	U		0.049		U	GAM
Uranium 238	U-238	U		2.9		U	GAM
Americium 241	14596-10-2	U		0.016	1.0	U	GAM

100 D Areas - Full Protocol'

QC-BLANK 33913

METHOD BLANKS
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Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>04/11/00</u>

TMA/RICHMOND
SAMPLE DELIVERY GROUP H0790

R003141-07

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7378</u> Contact <u>Melissa C. Mannion</u>	Client/Case no <u>Hanford</u> Case no <u>TRB-SBB-207925</u>	SDG <u>H0790</u>
Lab sample id <u>R003141-07</u> Dept sample id <u>7378-007</u>	Client sample id <u>Lab Control Sample</u> Material/Matrix _____ SAF No <u>B99-005</u>	SOLID

ANALYTE	RESULT	2 σ ERR	MDA	RDL	QUALI-	TEST	ADDED	2 σ ERR	REC	3 σ LMTS	PROTOCOL
	pCi/g	(COUNT)	pCi/g	pCi/g	FIE RS		pCi/g	pCi/g	%	(TOTAL)	LIMITS
Total Strontium	11.8	0.59	0.24	1.0	SR	11.2	0.45	105	81-119	80-120	
Uranium 233	11.1	1.3	0.60	1.0	U	9.28	0.37	120	76-124	80-120	
Uranium 235	8.17	1.1	0.17	1.0	U	7.54	0.30	108	76-124	80-120	
Uranium 238	12.4	1.5	0.57	1.0	U	10.1	0.40	123	75-125	80-120	
Plutonium 238	9.24	0.95	0.085	1.0	PU	9.98	0.40	93	83-117	80-120	
Plutonium 239/240	10.2	1.0	0.053	1.0	PU	10.6	0.42	96	83-117	80-120	
Americium 241	8.65	0.85	0.087	1.0	AM	9.58	0.38	90	84-116	80-120	
Cobalt 60	0.347	0.036	0.022	0.050	GAM	0.303	0.012	114	68-132	80-120	
Cesium 137	0.379	0.031	0.026	0.10	GAM	0.328	0.013	116	70-130	80-120	

100 D Areas - Full Protocol

QC-LCS 33912

LAB CONTROL SAMPLES
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Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-LCS</u>
Version <u>3.06</u>
Report date <u>04/11/00</u>

TMA / RICHMOND
SAMPLE DELIVERY GROUP H0790

R003141-09

BOXPT4

DUPLICATE

SDG <u>7378</u>	Client/Case no <u>Hanford</u>	SDG H0790
Contact <u>Melissa C. Mannion</u>	Case no <u>TRB-SBB-207925</u>	
DUPLICATE	ORIGINAL	
Lab sample id <u>R003141-09</u>	Lab sample id <u>R003141-03</u>	Client sample id <u>BOXPT4</u>
Dept sample id <u>7378-009</u>	Dept sample id <u>7378-003</u>	Location/Matrix <u>100-D Area (100-D-52)</u> <u>SOLID</u>
	Received <u>03/23/00</u>	Collected <u>03/21/00 14:35</u>
	% solids <u>99.9</u>	Custody/SAF No <u>B99-005-097</u> <u>B99-005</u>

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI- FIERS	RPD %	3σ PROT TOT LIMIT
Total Strontium	-0.061	0.14	0.18	1.0	U	SR	-0.038	0.13	0.18	U	-	
Uranium 233	0.325	0.17	0.13	1.0	J	U	0.326	0.16	0.12	J	0	108
Uranium 235	0.021	0.041	0.16	1.0	U	U	0.020	0.039	0.15	U	-	
Uranium 238	0.222	0.14	0.13	1.0	J	U	0.228	0.13	0.12	J	3	128
Plutonium 238	0.024	0.032	0.061	1.0	U	PU	-0.008	0.050	0.11	U	-	
Plutonium 239/240	0.008	0.032	0.061	1.0	U	PU	-0.008	0.033	0.080	U	-	
Americium 241	0.012	0.049	0.082	1.0	U	AM	0.020	0.026	0.050	U	-	
Potassium 40	3.07	0.33	0.16		GAM		3.13	0.29	0.12		2	38
Cobalt 60	U		0.018	0.050	U	GAM	U		0.015	U	-	
Cesium 137	U		0.016	0.10	U	GAM	U		0.016	U	-	
Radium 226	0.219	0.040	0.037	0.10		GAM	0.183	0.034	0.035		18	51
Radium 228	0.270	0.074	0.068	0.20		GAM	0.246	0.077	0.077		9	70
Europium 152	U		0.037	0.10	U	GAM	U		0.043	U	-	
Europium 154	U		0.056	0.10	U	GAM	U		0.048	U	-	
Europium 155	U		0.045	0.10	U	GAM	U		0.043	U	-	
Thorium 228	0.248	0.022	0.020			GAM	0.240	0.021	0.019		3	37
Thorium 232	0.270	0.074	0.068			GAM	0.246	0.077	0.077		9	70
Uranium 235	U		0.068		U	GAM	U		0.070	U	-	
Uranium 238	U		1.7		U	GAM	U		2.1	U	-	
Americium 241	U		0.067	1.0	U	GAM	U		0.065	U	-	

100 D Areas - Full Protocol

QC-DUP#3 33914

DUPLICATES
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Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DUP</u>
Version <u>3.06</u>
Report date <u>04/11/00</u>

000028

Date: 17 May 2000
To: Bechtel Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 100-D Areas - Full Protocol - Waste Site 100-D-52
Subject: Inorganics - Data Package No. H0790-RLN (SDG No. H0790)

INTRODUCTION

This memo presents the results of data validation on Data Package No. H0790-RLN prepared by RECRA LabNet (RLN). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analysis
BOXPT2	3/21/00	Soil	C	See note 1
BOXPT3	3/21/00	Soil	C	See note 1
BOXPT4	3/21/00	Soil	C	See note 1
BOXPT5	3/21/00	Soil	C	See note 1
BOXPT6	3/21/00	Soil	C	See note 1
BOXPT7	3/21/00	Soil	C	See note 1

1-ICP metals by 6010B (barium, lead, and chromium); mercury by 7471A.

Data validation was conducted in accordance with the BHI validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL May 1998). Appendices 1 through 5 provide the following information as indicated below:

- Appendix 1. Glossary of Data Reporting Qualifiers
- Appendix 2. Summary of Data Qualification
- Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
- Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
- Appendix 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

- **Holding Times**

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 30 days for chromium VI.

000001

All holding times were acceptable.

- **Blanks**

Preparation Blanks

At least one preparation blank, consisting of deionized distilled water processed through each sample preparation and analysis procedure, must be prepared and analyzed with every sample delivery group. In the case of positive blank results, samples with digestate concentrations less than five times the preparation blank value have had their associated values qualified as non-detected and flagged "U". Samples with concentrations of greater than five times the highest blank concentration do not require qualification.

In the case of negative blank results, if the absolute value exceeds the Contract Required Detection Limit (CRDL), all nondetects are rejected and flagged "UR" and all detects that are less than ten times the absolute value of the associated preparation blank result are qualified as estimates and flagged "J". If the absolute value of the negative preparation blank is greater than the IDL and less than or equal to the CRDL, all nondetects are qualified as estimates and flagged "UJ" and all detects less than ten times the absolute value of the blank are qualified as estimates and flagged "J". If the sample results are greater than ten times the absolute value of the preparation blank, no qualification is necessary.

All preparation blank results were acceptable.

Equipment Blanks

One equipment blank (BOXPT4) was submitted for analysis. Barium, chromium and lead were detected in the equipment blank. All other equipment blank results were acceptable.

- **Accuracy**

Matrix Spike

Matrix spike analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike recoveries must fall within the range of 70% to 130%. Samples with a spike recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a spike recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a spike recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally,

000002

for samples with a spike recovery greater than 130% and a sample result less than the IDL, no qualification is required.

All matrix spike recovery results were acceptable.

- **Precision**

Laboratory Duplicate Samples

Laboratory duplicate sample analyses are used to measure laboratory precision and sample homogeneity. Results must be within RPD limits of plus or minus 30% for solid samples. If RPD values are out of specification and the sample concentration is greater than five times the CRDL, all associated sample results are qualified as estimated and flagged "J". If RPD values are plus or minus two times the CRDL and the sample concentration is less than five times the CRDL, all associated sample results are qualified as estimated and flagged "J/UJ". The performance criteria for aqueous laboratory duplicates are an RPD less than 30% for positive sample results greater than five times the CRDL or plus or minus the CRDL for positive sample results less than five times the CRDL. Sample results outside the criteria are qualified as estimates and flagged "J/UJ".

All laboratory duplicate results were acceptable.

Field Duplicates

One set of field duplicate samples (BOXPT2/BOXPT3) were submitted for analysis. The results were compared using the same criteria as used for laboratory duplicates. The RPDs for lead (32%) and chromium (33%) were outside QC limits. Under the BHI statement of work, no qualification is required.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the 100 Area Remedial Action Sampling and Analysis Plan TDLs or the CRDL if no TDL was specified, to ensure that laboratory detection levels meet the required criteria. All analytes met the analyte specific TDL.

- **Completeness**

Data package No. H0790-RLN (SDG No. H0790) was submitted for validation and verified for completeness. The completion percentage was 100%.

000003

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

BHI, MRB-SBB-A23665, *Validation Statement of Work*, Bechtel Hanford Incorporated, September 5, 1997.

DOE/RL-96-22, Rev. 1, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, May 1998.

Appendix 1
Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with BHI validation SOW are as follows:

- U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.
- UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- J - Indicates the compound or analyte was analyzed for and detected. Due to a QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.
- BJ - Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.
- R - Indicates the compound or analyte was analyzed for, detected, and due to an identified QC deficiency, the data are unusable.
- UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified QC deficiency.
- NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2
Summary of Data Qualification

000007

DATA QUALIFICATION SUMMARY

SDG: H0790	REVIEWER: TLI	DATE: 5/17/00	PAGE <u>1</u> OF <u>1</u>
COMMENTS: No qualifiers assigned.			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON

000008

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

000009

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 04/04/00

CLIENT: TNU-Hanford B99-005
 WORK ORDER: 10985-001-001-9999-00

RCRA LOT #: 0003L779

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING		DILUTION FACTOR
					LIMIT		
-001	BOXPT2	Barium, Total	59.7	MG/KG	0.02		1.0
		Chromium, Total	5.3	MG/KG	0.05		1.0
		Mercury, Total	0.02 u	MG/KG	0.02		1.0
		Lead, Total	3.1	MG/KG	0.21		1.0
-002	BOXPT3	Barium, Total	59.1	MG/KG	0.02		1.0
		Chromium, Total	7.4	MG/KG	0.05		1.0
		Mercury, Total	0.02 u	MG/KG	0.02		1.0
		Lead, Total	4.3	MG/KG	0.20		1.0
-003	BOXPT4	Barium, Total	0.97	MG/KG	0.02		1.0
		Chromium, Total	0.22	MG/KG	0.05		1.0
		Mercury, Total	0.02 u	MG/KG	0.02		1.0
		Lead, Total	0.42	MG/KG	0.20		1.0
-004	BOXPT5	Barium, Total	68.9	MG/KG	0.02		1.0
		Chromium, Total	3.5	MG/KG	0.05		1.0
		Mercury, Total	0.02 u	MG/KG	0.02		1.0
		Lead, Total	1.9	MG/KG	0.18		1.0
-005	BOXPT6	Barium, Total	54.2	MG/KG	0.02		1.0
		Chromium, Total	4.7	MG/KG	0.05		1.0
		Mercury, Total	0.02 u	MG/KG	0.02		1.0
		Lead, Total	2.2	MG/KG	0.18		1.0
-006	BOXPT7	Barium, Total	50.0	MG/KG	0.02		1.0
		Chromium, Total	3.8	MG/KG	0.05		1.0
		Mercury, Total	0.02 u	MG/KG	0.02		1.0
		Lead, Total	2.0	MG/KG	0.22		1.0

PW
 5/17/00

0000011

005

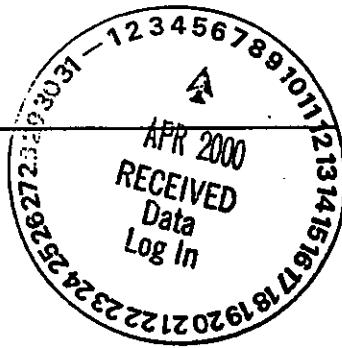
Appendix 4
Laboratory Narrative and Chain-of-Custody Documentation

000012



**RECRE
ENVIRONMENTAL
INC.**

Chemical and Environmental Measurement Information



**Recra LabNet Philadelphia
Analytical Report**

**Client : TNU-HANFORD B99-005
RFW# : 0003L779
SDG/SAF# : H0790/B99-005**

**W.O.# : 10985-001-001-9999-00
Date Received: 03-23-00**

METALS CASE NARRATIVE

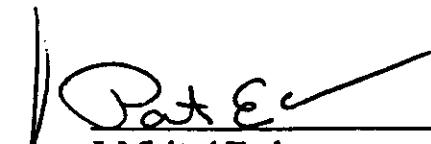
1. This narrative covers the analyses of 6 soil samples.
2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary.
3. All analyses were performed within the required holding times.
4. The cooler temperature has been recorded on the Chain of Custody.
5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).
6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).
7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL) or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.
8. All ICP Interference Check Standards were within control limits.
9. All laboratory control samples (LCS) were within the laboratory control limits. Refer to the Inorganics Laboratory Control Standards Report.
10. All matrix spike (MS) recoveries were within the 75-125% control limits. Refer to the Inorganics Accuracy Report.
11. All duplicate analyses were within the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of **14** pages.

4000013

0012

12. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.


J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory
mld/m03-779

04-04-00
Date

R

000014

0022

Collector Kerkow/Cowgill	Company Contact RB Kerkow	Telephone No. 531-0635	Project Coordinator TRENT, SJ	Price Code 8K	Date Entered 15 Days
Project Designation 100-D Areas - Full Protocol	Sampling Location 100-D Area (100-D-52)		SAF No. B99-005	Air Quality <input type="checkbox"/>	
Ice Chest No. SMD	Field Logbook No. EL-1339-6	COA R00D522600	Method of Shipment FEDEX		
Shipped To TMA/RCRA	Offsite Property No. A000144			Bill of Lading/Air Bill No. 42357453 - 82007752-6010	
POSSIBLE SAMPLE HAZARDS/REMARKS Potentially Radioactive		Preservation None	None		
		Type of Container X	G/P		
		No. of Container(s) 1			
Special Handling and/or Storage		Volume 250mL			
SAMPLE ANALYSIS			See Item (1) in Special Instructions	See Item (2) in Special Instructions	TIE To ↓
Sample No.	Matrix *	Sample Date 3-21-00	Sample Time 1420	X	BOX1B5
BOXPT2	Soil	3-21-00	1425	X	BOX1B5
BOXPT3	Soil	3-21-00	1435	X	BOX1B5
BOXPT4	Soil	3-21-00	1440	X	BOX1B7
BOXPT5	Soil	3-21-00	1445	X	BOX1C3
CHAIN OF POSSESSION			SPECIAL INSTRUCTIONS		
Relinquished By J. Kerkow/S. Cowgill	Date/Time 3-21-00/1630	Received By Frigg A	Date/Time 3-21-00/1630	Matrix *	
Relinquished By Ref 1A	Date/Time 3-22-00/0900	Received By R. Thoren	Date/Time 3-22-00/0900	3-Soil 32-Solidified 50-Solid	
Relinquished By R. Thoren	Date/Time 3-22-00/1450	Received By FED EX	Date/Time	3-Shells W-Water O-Oil A-Air DS-Dried Solids DL-Dried Liquids T-Tissue W-Wipe L-Liquid V-Vegetation X-Other	
Relinquished By FED EX	Date/Time 3-23-00/0930	Received By TRappel	Date/Time 3-23-00/0930		
Relinquished By	Date/Time	Received By	Date/Time		
Relinquished By	Date/Time	Received By	Date/Time		
LABORATORY SECTION	Received By	Title			Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By			Date/Time

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Collector Kerkow/Cowgill	Company Contact RB Kerkow	Telephone No. 531-0635	Project Coordinator TRENT, SJ	Price Code 8K	Data Turnaround 15 Days
Project Designation 100-D Areas - Full Protocol	Sampling Location 100-D Area (100-D-52)		SAF No. B99-005	Air Quality <input type="checkbox"/>	
Site Chest No. SMD	Field Logbook No. EL-1339-6	COA R000522600	Method of Shipment FED EX		

Shipped To
TMA/RECRA
JAC 3-21-00

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially Radioactive

Special Handling and/or Storage

\$1000

SAMPLE ANALYSIS

Sample No. BOXPT7	Matrix * Soil	Sample Date 1450	Sample Time X	Preservation	None								
				Type of Container	OP								
				No. of Container(s)									
				Volume									

See item (1) in
Special
Instructions.

See item (2) in
Special
Instructions.

TIE
TO
7

CHAIN OF POSSESSION			Sign/Print Names		SPECIAL INSTRUCTIONS			Matrix *
Relinquished By J.A. Cowgill/Gerogill	Date/Time 3-21-00/1630	Received By Fridge 1A	Date/Time 3-21-00 1630		(1) Gamma Spectroscopy (Cesium-137, Cadmium-110, Americium-141, Europium-152, Europium-155); Isotope-Plutonium; Isotope Uranium; Americium-241; Strontium-89,90 - Total Sr	RAT 3-22-00		
Relinquished By R. Thoren	Date/Time 3-22-00/0900	Received By R. Thoren	Date/Time 3-22-00/0900		(2) ICP Metals - 60104 (Supertrace) (Barium, Chromium, Lead); Mercury - 7471 - (CV)			
Relinquished By R. Thoren	Date/Time 3-21-00/1430	Received By FED EX	Date/Time					
Relinquished By FedEx 3-23-00 0930	Date/Time 3-23-00 0930	Received By TRappel	Date/Time 3-23-00 0930					
Relinquished By	Date/Time	Received By	Date/Time					
Relinquished By	Date/Time	Received By	Date/Time					

S=Soil
SE=Sediment
SD=Solid
S=Sludge
W=Water
O=Oil
Ac=Air
DS=Dried Solids
DL=Dried Liquids
T=Time
W=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Date/Time
FINAL SAMPLE DISPOSITION	Disposed Method	Date/Time

Appendix 5
Data Validation Supporting Documentation

000017

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	100D 100-TS52		DATA PACKAGE:	H0790	
VALIDATOR:	TLI	LAB:	RecRA	DATE:	4/28/00
CASE:			SDG:	H0790	
ANALYSES PERFORMED					
<input type="checkbox"/> CLP/ICP	<input type="checkbox"/> CLP/GFAA	<input type="checkbox"/> CLP/Hg	<input type="checkbox"/> CLP/Cyanide	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> SW-846/ICP	<input type="checkbox"/> SW-846/GFAA	<input checked="" type="checkbox"/> SW-846/Hg	<input type="checkbox"/> SW-846 Cyanide	<input type="checkbox"/>	<input type="checkbox"/>
SAMPLES/MATRIX Soil					
Box PT 2 Box PT 3 Box PT 4 Box PT 5 Box PT 6					
Box PT 7					

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Is technical verification documentation present? Yes No N/A
 Is a case narrative present? Yes No N/A

Comments: _____

2. HOLDING TIMES

Are sample holding times acceptable? Yes No N/A
 Comments: _____

A197 000018

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

3. INSTRUMENT PERFORMANCE AND CALIBRATIONS

Were initial calibrations performed on all instruments?	Yes	No	N/A
Are initial calibrations acceptable?	Yes	No	N/A
Are ICP interference checks acceptable?	Yes	No	N/A
Were ICV and CCV checks performed on all instruments?	Yes	No	N/A
Are ICV and CCV checks acceptable?	Yes	No	N/A

Comments: _____

4. BLANKS

Were ICB and CCB checks performed for all applicable analyses? Yes	No	N/A	
Are ICB and CCB results acceptable?	Yes	No	N/A
Were preparation blanks analyzed?	Yes	No	N/A
Are preparation blank results acceptable?	Yes	No	N/A
Were field/trip blanks analyzed?	Yes	No	N/A
Are field/trip blank results acceptable?	Yes	No	N/A

Comments: T4 - FEB

5. ACCURACY

Were spike samples analyzed?	Yes	No	N/A
Are spike sample recoveries acceptable?	Yes	No	N/A
Were laboratory control samples (LCS) analyzed?	Yes	No	N/A
Are LCS recoveries acceptable?	Yes	No	N/A

Comments: _____

A-20
000019

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

6. PRECISION

- Were laboratory duplicates analyzed? Yes No N/A
 Are laboratory duplicate samples RPD values acceptable? Yes No N/A
 Were ICP serial dilution samples analyzed? Yes No N/A
 Are ICP serial dilution %D values acceptable? Yes No N/A
 Are field duplicate RPD values acceptable? Yes No N/A
 Are field split RPD values acceptable? Yes No N/A
 Comments: Chromium - 33% Icad 32%
-
-
-
-

7. FURNACE AA QUALITY CONTROL

- Were duplicate injections performed as required? Yes No N/A
 Are duplicate injection %RSD values acceptable? Yes No N/A
 Were analytical spikes performed as required? Yes No N/A
 Are analytical spike recoveries acceptable? Yes No N/A
 Was MSA performed as required? Yes No N/A
 Are MSA results acceptable? Yes No N/A
 Comments:
-
-
-
-

8. REPORTED RESULTS AND DETECTION LIMITS

- Are results reported for all requested analyses? Yes No N/A
 Are all results supported in the raw data? Yes No N/A
 Are results calculated properly? Yes No N/A
 Do results meet the CRDLs? Yes No N/A
 Comments:
-
-
-
-

A-212

000020

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 04/04/00

CLIENT: TNU-Hanford B99-005

RECRA LOT #: 0003L779

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L1075-MB1	Barium, Total	0.21	MG/KG	0.02	1.0
		Chromium, Total	0.17	MG/KG	0.06	1.0
		Lead, Total	0.23	MG/KG	, 0.23	1.0
BLANK1	00C0096-MB1	Mercury, Total	0.02	MG/KG	0.02	1.0

000021

0052

Roca LabNet - Louisville

INORGANICS ACCURACY REPORT 04/04/00

CLIENT: TNU-RANDFORD E99-005

ORK ORDER: 10985-001-001-9999-00

MECR A LOT #: 0003L779

AMPLE NUMBER	SITE ID	ANALYTE	SPIKED	INITIAL	SPIKED	DILUTION	FACTOR (SPK)
			SAMPLE	RESULT	AMOUNT	RECOV	
001	W01PZ2	Barium, Total	237	59.7	183	95.9	1.0
		Chromium, Total	22.7	5.3	18.5	94.1	1.0
		Mercury, Total	0.16	0.02u	0.16	105.2	1.0
		Lead, Total	46.4	3.1	46.2	93.7	1.0

000022

007

Recra LabNet - Livermore

INORGANICS PRECISION REPORT 04/04/00

CLIENT: TNU-HANFORD B99-005

RECRA LOT #: 0003L779

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL			DILUTION FACTOR (REP)
			RESULT	REPLICATE	RPD	
-001REP	BOXPT2	Barium, Total	59.7	58.1	2.7	1.0
		Chromium, Total	5.3	5.0	5.8	1.0
		Mercury, Total	0.02u	0.02u	NC	1.0
		Lead, Total	3.1	3.8	10.2	1.0

000023

008-

Data validation results:	DWS		
Validator:			
Date:	5/17/2000		
Projects:	100D full protocol, Group 2 North Pipelines 100D full protocol, Waste Site 1-D-52 Dry well		
SAFs:	B98-005 B99-005		
SDGs:	H0806 H0790		
data package	analysis	page	comment
H0806	Rad	4	Under the heading "Detection levels" (section begins on page 3) Radium 226 was recorded above its TDL in sample BOXXJ8. The paragraph at the top of page 4 should be changed to reflect this.
H0806	Rad	4	The last paragraph under the heading "minor deficiencies" should be changed to reflect the fact that Radium 228 was reported above its TDL in sample BOXXJ8.
H0806	Rad	11	In the data summary table, under the qualifier column for sample BOXXX0, a "U" flag is recorded for Europium 152 when the laboratory reported a result of 1.60 pCi/g (the TDL is 0.1 pCi/g).
H0806	Rad	11	In the data summary table, under the qualifier column for sample BOXXX2, no flag is recorded for Thorium 232 when the laboratory reported a result of less than the MDA and flagged the result with a "U" qualifier.
H0806	Inorganic (Cr+6)	-	no problems
H0790	Rad	11-16	Just a question, no correction needed. The laboratory assigned "J" flags to a number of analytes observed above their MDLs. In the past the TechLaw Inc. reviewer would delete these "J"s from the laboratory's data sheets. This time the "J"s were not deleted from the lab's nor were they reported on the data summary table (page 10). Why is the lab J flagging what appears to be real data?
H0790	Inorganic	10	The barium result for sample BOXP74 was rounded from 0.97 mg/Kg to a value of 1.0 mg/Kg.

RLW

resolved
duts \$725/2000

1/15

resolved
duts \$725/2000

INORGANIC ANALYSIS, SOLID MATRIX, MG/KG									
Project BECHTEL-HANFORD Laboratory: RERC LABNET									
Sample Number SDS: H0790									
Location	A1	A1	A2	A3	A4				
Remarks	Duplicate	E. Blank							
Sample Date	3/21/00	3/21/00	3/21/00	3/21/00	3/21/00				
Inorganics	CRCI	Result Q							
Boron, total	59.7	59.1	0.97	68.9	54.2	50.0	4.7	3.8	
Chromium, total	0.6	5.3	7.4	0.22	3.5	4.3	0.42	1.9	2.2
Mercury, total	0.05	0.02 U							
Lead, total	2	3.1	4.3						
Page - 1 of - 1									
Sample Number	SDS: H0790	BOXPT2	BOXPT3	BOXPT4	BOXPT5	BOXPT6	BOXPT7		
Location	A1	A1	A1	A2	A3	A4			
Remarks	Duplicate	E. Blank							
Sample Date	3/21/00	3/21/00	3/21/00	3/21/00	3/21/00	3/21/00			
Inorganics	CRCI	Result Q							
Boron, total	59.7	59.1	0.97	68.9	54.2	50.0	4.7	3.8	
Chromium, total	0.6	5.3	7.4	0.22	3.5	4.3	0.42	1.9	2.2
Mercury, total	0.05	0.02 U							
Lead, total	2	3.1	4.3						

Project: BECHTEL-HANFORD																		
Laboratory: TRT																		
Case	SDG: H0804																	
Sample Number		BOXXJ8	BOXXJ9	BOXXX0	BOXXX1	BOXXX2	BOXXX3											
Location		C2	C2	C3	D4	D5	D6											
Remarks		Duplicate																
Sample Data		4/3/00	4/3/00	4/3/00	4/3/00	4/3/00	4/3/00											
Radiochemistry	CRDL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result
Strontium (total)	1	0.868		0.712		0.329		0.227		0.592		0.565						
Uranium-233	0.1	0.526	J	0.933	J	0.433	J	0.205		0.449		0.349						
Uranium-235	0.1	0.073	UJ	0.100	UJ	0.078	UJ	0.023	U	0.056	U	0.023	U					
Uranium-238	0.1	0.541	J	0.700	J	0.369	J	0.354	J	0.449	J	0.446	J					
Plutonium-238	0.1	0.018	U	0.011	U	0.010	U	0	U	0.021	U	0.013	U					
Plutonium-239/40	0.1	0.544		0.435		0.060	U	0.073		0.735		0.051						
Americium-241	0.1	0.135	UR	0.124	UR	0.022	UJ	0.046	UJ	0.163	J	0.050	J					
Potassium-40		7.56		9.03		7.51		9.97		12.0		9.32						
Cobalt-60	0.05	7.33		7.10		0.079		0.256		8.05		0.382						
Cesium-137	0.05	19.1		19.9		16.9		3.35		39.5		27.1						
Radium-226		0.466		0.592		0.340		0.344		0.498		0.430						
Radium-228		U	U	0.337	U	0.597		0.592		0.416	U	0.504						
Europlum-162	0.1	28.7		27.9		1.60		3.46		64.2		1.83						
Europlum-164	0.1	3.61		3.28		U	U	0.393		8.01		0.343						
Europlum-166	0.05	U	U	U	U	U	U	U	U	U	U	U	U					
Thorium-228		0.537		0.529		0.536		0.450		0.519		0.373						
Thorium-232		U	U	0.337	U	0.597		0.592		0.416	U	0.504						
Uranium-235 (GEA)	0.1	U	U	U	U	U	U	U	U	U	U	U	U					
Uranium-238 (GEA)	0.1	U	U	U	U	U	U	U	U	U	U	U	U					
Americium-241 (GEA)	0.1	U	U	U	U	U	U	U	U	U	U	U	U					

BHI Sample Management
Phone: (509) 372-9346
FAX: (509) 372-9487

To: Bruce Christian Fax: 407-345-0417

From: Jeanette Duncan Date: 5-22-00

Re: Pages: 2

CC:

Quick Turn / Priority Data

Final Data Package

Bruce -

Need comments incorporated on both H806 + H790.

Client(s) had no comments. Rich had no comments.

Claude had no comments. Dave Shaw had several -

Rich whittled it down to 3. Please disposition these as soon as you can. Can you send these files to me via email? Email address is:

JMDUNCAN@mail.bhi-erc.com

Thanks for your help! Call if you have any problems

375-9439

Jeanette

BHI S&D MANAGEMENT 509 372 9487

(AUTO)

THE FOLLOWING FILE(S) ERASED

FILE	FILE TYPE	OPTION	TEL NO.	PAGE	RESULT
092	MEMORY TX		14073450417	02/02	OK

ERRORS

- 1) HANG UP OR LINE FAIL 2) BUSY 3) NO ANSWER 4) NO FACSIMILE CONNECTION

BHI Sample Management
Phone: (509) 372-9346
FAX: (509) 372-9487

To: Bruce Christian Fax: 407-345-0417

From: Jeannette Duncan Date: 5-22-00

Re: Pages: 2

CC:

Quick Turn / Priority Data

Final Data Package

Bruce -

Need comments incorporated on both 16806 + 16790.

Duncan, Jeanette M

From: Weiss, Richard L
Sent: Wednesday, May 17, 2000 11:23 AM
To: Duncan, Jeanette M
Subject: Validation Review for H0806 and H0790 Validation Packages

Jeanette,

SDG H0790 Rad and Metals - No comments.

SDG H0806 Rad and Metals - No comments.

Rich Weiss

Duncan, Jeanette M

From: Ivey, Lyle E
Sent: Monday, May 22, 2000 8:37 AM
To: Duncan, Jeanette M
Subject: 100-D-52 Validation Package

Jeanette,

I've reviewed the 100-D-52 validation package and it seems OK to me. Please let me know when we sent the review comments back to the validator (so I can update my schedule).

Thanks,

Lyle E. Ivey
372-9680

Review Comment Record (RCR)

Review Comment Record (RCR)	1. Date 05/19/00	2. Review No. QA-0028
	3. Project 100-D	4. Page Page 1 of 1

5. Document Number(s)/Title(s) SDG No. H0790	6. Program/Project/ Building Number 100-D Full Protocol, Waste Sites 100D-52	7. Reviewer Claude Stacey	8. Organization/Group Quality Program	9. Location/Phone 372-9208
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17. Comment Submittal Approval:

10. Agreement with indicated comment disposition(s)

11. CLOSED

Organization Manager (Optional)

Reviewer/Point of Contact

Reviewer/Point of Contact

Date

Date

Author/Originator

Author/Originator

12. Item	13. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/resolve the discrepancy/problem indicated.)	14. Hold Point	15. Disposition (Provide justification if NOT accepted.)	16. Status
1	Radiochemistry: OK - No Comments			
2	Inorganic: OK			
3				
4				
5				